

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- Vth SEMESTER-EXAMINATION – MAY/JUNE - 2012****Subject code: 152403****Date: 04/06/2012****Subject Name: Applied Power Electronics****Time: 02:30 pm – 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Notation used have usual meaning.

- Q.1** (a) What is power electronics? Discuss concept of power processing. **07**
(b) Explain log amplifier circuit using operational amplifier. **07**

- Q.2** (a) Explain precision rectifier circuit with neat diagram using operational amplifier. **07**
(b) What is PWM? Explain single pulse width modulation technique. Where it is used? **07**

OR

- (b) Solve following simultaneous equations using analog computation. **07**

$$2x + 3y = 5$$

$$5x + y = 1$$

Draw required circuit for illustration purpose.

- Q.3** (a) Discuss switched capacitor circuit concept. And realize following circuits using switched capacitor. **07**
(i) Inverting amplifier
(ii) Non inverting amplifier.
(b) Discuss active high frequency filter circuit with its response. **07**

OR

- Q.3** (a) What is function of filter circuit? Explain active low pass filter circuit with its response. **07**
(b) Explain working of HVDC transmission. **07**

- Q.4** (a) Draw basic diagram of DC to DC converter and explain its working. **07**
(b) Discuss following consumer applications in brief. **07**
(i) LED lighting.
(ii) Induction cooking.

OR

- Q.4** (a) Explain working of half wave controlled converter circuit. **07**
(b) Explain working principle of DC drives with block diagram. State its application. **07**

- Q.5** (a) Explain off line UPS with basic block diagram. **07**
(b) Draw and explain working of battery charging circuit. **07**

OR

- Q.5** (a) Discuss induction heating as an industrial application. **07**
(b) Explain fan regulator circuit with appropriate circuit. **07**
